



What Should the State Do About Plastics? ■

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While progress has been made in recycling and conservation of the State's plastics, there are unaddressed problems related to plastics use, recycling, and disposal. Existing California policies are not successfully addressing the State's plastic issues.

Plastics are really a victim of their own achievements. Plastics are garnering attention because they have successfully displaced other materials in a broad range of products and packaging. However, plastics also have displaced other materials in the State's landfills and environment.

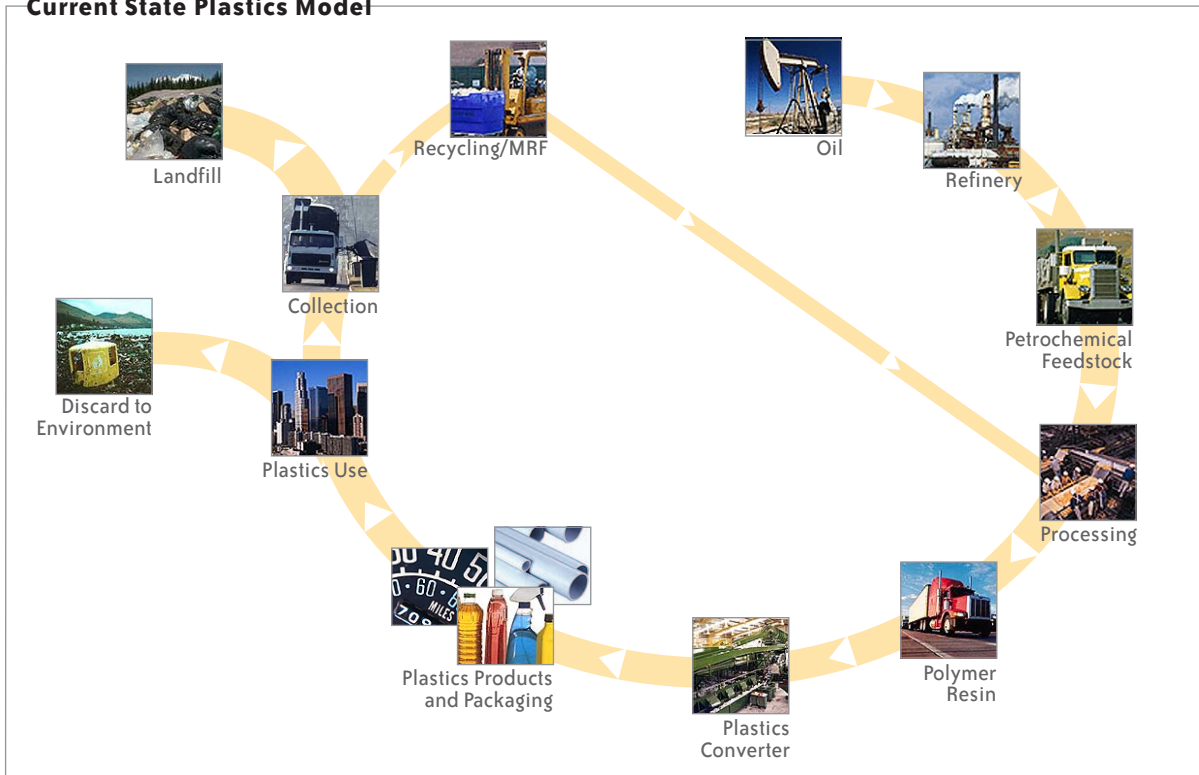
It is time to reevaluate what has already been implemented in the State to manage plastics, build on those policies that are working, and replace what is not with new and smart policy options. California, along with the United States, is already behind much of the rest of the world in trying to manage plastics and packaging waste. However, plastic policies applied in other parts of the world have their own specific flaws, and many of these policies are not appropriate for California. Today, California has the opportunity to take a leadership role in plastics management by providing a collaborative process for all interested stakeholders to work together so as to identify and implement new and unique California specific solutions to promote plastics resource conservation, increase plastics recycling, and increase the use of recycled plastics.

A Fresh Approach is Needed for Managing Plastics in the State

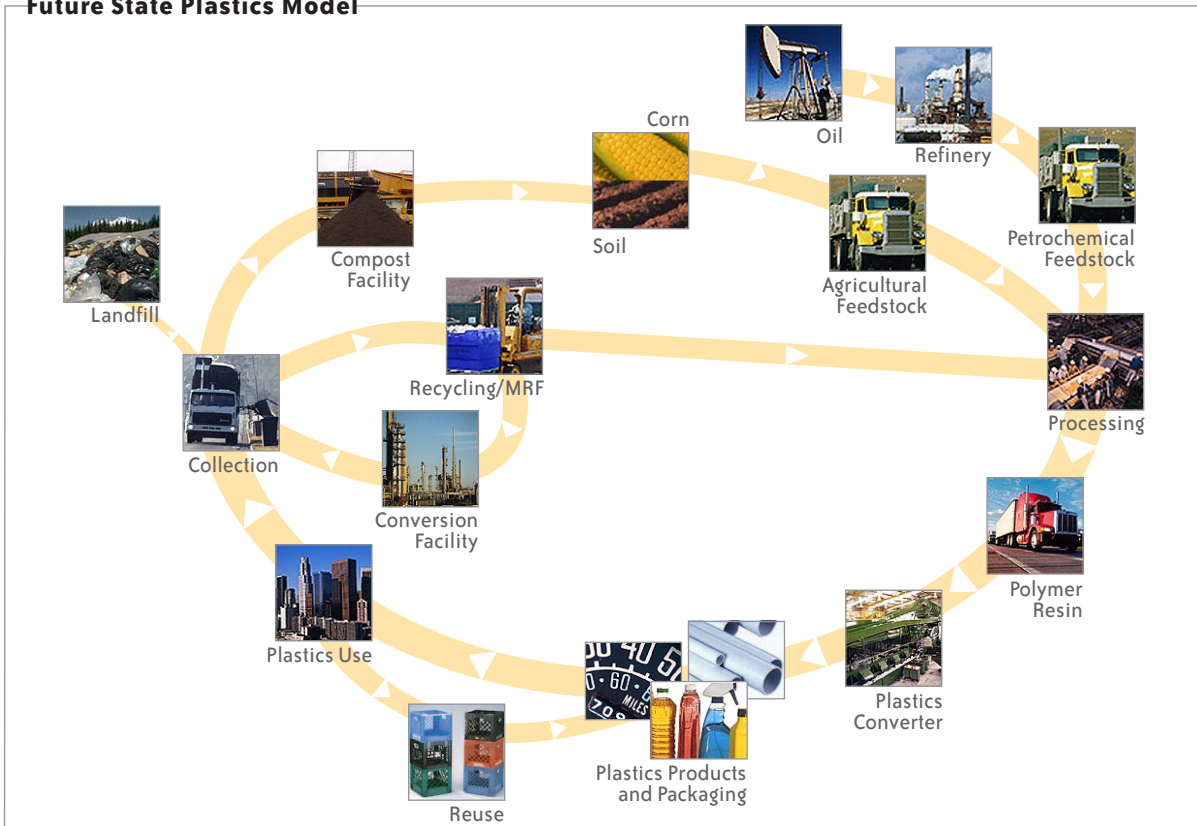
There is no single answer, policy, or program that will achieve all California plastic policy goals. Some plastics can, and should, be recycled, some plastics should not be recycled; some plastic products can, and should, contain recycled content, some plastics should not; some plastic products should be biodegradable, some should not; some plastics waste should be converted to fuel, some should not; some plastics are managed appropriately today, most are not.

Our current plastics management model has most plastics being landfilled, some recycled, and some escaping to our environment. A future plastics model would have an optimal mix of management alternatives for plastics, including reuse, recycling, composting, and conversion. In addition, there will be many other, currently unknown, technological alternatives developed in the future to supplement this plastics management mix. The challenge for California is to develop and implement a range of flexible policies and programs that will allow environmentally sound, technologically appropriate, and economically efficient solutions to rise to the top for each plastics type and application.

Current State Plastics Model



Future State Plastics Model



Certain State Plastic Policy Issues Need to Be Explicitly Considered Upfront

The first question, before asking what plastic policies to implement, is what should be California's plastic goals? Several broad plastic policy goals have been proposed.

Plastic goals should acknowledge that we need to embrace plastics for their positive benefits to our society and economy at large. At the same time, our goals need to stress that we have to better manage this material so as to address the environmental and economic externalities generated as plastic's use becomes more and more widespread.

Plastics recycling and increased collection goals should be promoted when technically and economically feasible, but not to the exclusion of other management goals. Plastics recycling alone will not solve the State's plastic management issues.

Solving problems arising from increased use and disposal of plastics will require all involved parties to work together to identify and implement a broad range of solutions. If plastic management issues are not addressed now, they will

only get worse later. It is time for stakeholders to work together to address solutions for managing the increased use of plastics in the State.

Folded into a list of plastic policy goals and objective should be the three specific objectives of this plastics white paper: (1) increasing the plastics recycling rate, (2) increasing the use of recycled plastics, and (3) promoting plastics resource conservation. These three objectives are all reasonable, but as is so often the case, the "devil is in the details". What plastics should be recycled? How much plastics should be recycled and at what cost? What "counts" as plastics recycling? Who should pay for plastics recycling? What products should use more recycled plastics? If products are manufactured out-of-state, what is the impact on California's plastic markets? How do we balance and measure plastic source reduction and recycling goals? What is resource conservation as it applies to plastics? Do we use mandates or incentives, to achieve plastic goals? What should the criteria for evaluating plastic policies be? Examining each of these plastic policy questions in more detail can help illuminate potential plastic policy directions for California.

Plastic Policy Goals and Objectives

Issues

1. Plastics are here to stay in our lifetimes as they are integral to our lifestyle and economy, and they have societal benefits due to their light weight and versatile range of applications
2. There are significant economic externalities in the plastics production, use, recycling, and disposal phases (i.e., litter, marine ecosystem impacts, chemical emissions, and known/unknown health risks)

Goals

1. Do not eliminate plastics. Instead, develop management systems to optimize plastics use, recycling, and disposal, benefiting from the positives of plastics and minimizing their negatives
2. Develop policy options that internalize the economic and environmental externalities associated with plastics and equitably shares these costs between all involved parties
 - a. Develop funding mechanisms to support internalization of plastic externalities. This funding could be used for:
 - Preventing and cleaning up marine and land-based plastics litter
 - Plastics resource conservation education
 - Efficient plastics collection and recycling
 - Acceptable plastics disposal
 - b. Minimize the use on hazardous or potentially hazardous additives in plastics
 - c. Conduct research on the impacts of various plastics on health and the environment, and seek to reduce the harmful impacts of plastics.
 - d. Minimize improper discarding of plastics by providing adequate receptacles and locations for discarding or recycling plastics

Plastic Policy Goals and Objectives *(continued)*

Issues

3. Plastics production continues to far outpace plastics recycling, and it is displacing other more recyclable materials, as a result plastics in the MSW discard continues to grow rapidly, and it is the fastest growing portion of the MSW wastestream
4. Plastics represent a disproportionate share of landfill space, and next to paper, is now the second largest overall category of waste volume going into municipal landfills
5. The plastics recycling rate has stagnated at a low level, and plastics recycling quantities and rates remain lower than other materials such as steel, aluminum, glass, and paper
6. Plastics bottle-to-bottle recycling historically has been miniscule compared to other secondary material closed loop recycling
7. Plastics historically have been uneconomical to recycle without subsidies (average collection and processing costs exceed scrap values by more than two and one-half times), plastics are generally not as economic to recycle as other material types, and plastics recycling costs could rise further due to the proliferation of plastic containers. Higher plastics recycling rates come at an extremely high cost, and higher than that for other material types
8. Plastics are a global commodity, subject to the volatility of world economic forces
9. Plastics management issues have not changed materially in the last twenty years, and optimizing plastics use, recycling, and disposal in California will require a significant shift in public
10. Fundamental plastic issues are by their very nature, subtle, long-term, unmet social infrastructure challenges that have not been effectively addressed, partly because they are not as dramatic as some other shorter-term environmental concerns such as automobile tires, waste oil, batteries, or hazardous waste, nonetheless, plastics need to be addressed before they create a crisis

Goals

3. Promote plastics resource conservation and minimize the unnecessary use of plastics. Minimize plastics growth in the wastestream through source reduction, reuse, recycling, and conversion options that are environmentally sound and technically and economically feasible. Work to ensure that existing landfill systems can handle increasing levels of plastics
4. Identify reasonable recycling targets for plastics – some equal to other material types and some lesser. Promote technological innovations in plastics recycling where it makes economic and technical sense. Where recycling does not make economic and technical sense, promote plastics with reduced environmental impacts, such as biodegradable plastics. Also promote technological innovations for less-recyclable plastics such as conversion technologies
6. Encourage bottle-to-bottle recycling where it is technologically and economically feasible (for example: Coke, Pepsi, HDPE containers). Do not mandate closed-loop recycling when other open-loop options are also feasible. Develop policies that promote, or allow for either type of recycling
7. Promote and support innovations in plastics product and packaging design for recycling to allow for the economical collection of clean plastic streams. Develop and disseminate best practices in collection and processing systems to further support the economical collection of clean plastic streams. Develop and promote plastics collection and processing quality standards. Equitably spread the cost of recycling plastics among all responsible parties. Do not subsidize plastics recycling costs so as to create disincentives to collection and processing efficiencies
8. Allow flexibility in plastic policies and programs in order to accommodate changes in global economic conditions as well as new developments in plastics recycling and production. Consider the impact of potential new forthcoming California plastic policies within the context of a global plastics economy
9. Develop a long-term comprehensive approach to resolving plastics issues in California reflecting product stewardship/shared responsibility principles and the unique characteristics of plastics as compared to other materials. Use a collaborative process with state and local government, industry, consumers, and environmentalists
10. Work with all interested parties to better understand and accept the long-term benefits and problems associated with plastics and agree to develop long-term policy options that take these characteristics into account. Promote and support clear, honest, and relevant information about plastics use, recycling, disposal, and its positive and negative impacts. Prevent future potential problems related to plastics rather than waiting to resolve them after they occur

What plastics should be recycled?

Not all plastics should be recycled. For many plastics there is not enough material of sufficient quantity or quality to warrant establishment of collection programs, processing, and marketing. Currently, beverage containers, some other rigid containers, film from commercial and some agricultural sources, battery casings, EPS packaging peanuts, transport packaging, and some durable goods are being recycled to some extent in California. Most other plastics are not being recycled to any meaningful degree in California.

In the future there could be recycling in place for other plastic types, such as shredder waste from automobiles, and more extensive electronics recycling. There also are new technologies that can potentially recycle mixed plastics into useable products. Because plastic technologies and markets are in continuous flux, it is not wise to over-dictate plastics recycling. Incentives that promote plastics recycling, or the conditions under which plastics recycling can become profitable, are preferable to mandates to recycle certain plastic materials.

Why should some plastics be recycled? Some argue that the economics of plastics recycling cannot be rationalized until the State prioritizes its goals and determines if the primary goal of plastics recycling is to reduce landfill waste or encourage the reuse of packaging. Although plastics in landfills are increasing at a rapid rate, plastics recycling does not contribute significantly to meeting overall State waste diversion goals. Plastic recycled content laws have been only moderately successful, and have relatively little impact on plastic recycling rates in California.

There are reasons to recycle some plastics, which pertain to broader resource conservation goals, particularly efficient use of materials and energy. There are plastic products and packages for which recycling is an effective management alternative, saving energy and resources, and maintaining the resin in the economic system as compared to permanently landfilling the material. The goal of plastics recycling should be the broader management goal of optimizing use of the material.

How much plastics should be recycled and at what cost?

It is not useful to establish a single plastics recycling rate for California. With policy support and incentives, the market should determine how much plastic, and which type, is recycled. The recycling rate for plastics is likely to be lower than for other non-plastic material types in many cases – and this is not inherently bad, when one considers the general source reduction benefits of plastics, as well as the high economic costs of recycling plastic. In their 1997 report, Solid Waste Management at the Crossroads, Franklin and Associates posed a recycling rate of 7 percent for all plastics by 2000 and 10 percent by 2010. The 1999 rate, nationwide, was just below 6 percent.

The California beverage redemption program has goals of 65 percent for each material type, including all plastics. PET plastics have exceeded this goal in previous years, and could probably do so again over time, once recycling catches up to the new containers. The 65 percent goal is a stretch, but it is probably also ultimately achievable for HDPE beverage containers, and even for HDPE milk jugs, which are not part of the beverage program. The 65 percent goal is not realistic for # 3 through # 7 plastic containers, as there are simply not enough containers and collection programs in these resin categories.

Rigid plastic packaging has a 25 percent recycling rate goal, which could probably be met through beverage container recycling alone, if the 65 percent goal were met for PET and HDPE. Through industry-funded return programs, expanded polystyrene (EPS) packaging peanuts are currently recycled at a rate of about 50 percent and reused at a rate of about 30 percent nationally.

Economically, it makes sense to focus on increasing recycling rates for those plastic containers and materials with a recycling infrastructure in place, rather than expending effort on new collection systems for small-volume plastic containers. However, the types of plastic products available to recycle are always changing, and if new markets for recycling develop – such as the film markets for composite lumber – these markets and recycling of these materials should be encouraged and promoted. Part of any forthcoming collaborative plastics effort of industry and government would be to establish realistic recycling rate goals for different plastic types.

What counts as plastics recycling?

There are many new plastic management alternatives currently being developed that are not traditional recycling, but could potentially divert plastic materials from landfills. These alternative management options should “count” as recycling, and be promoted and encouraged after traditional recycling. Once those plastic materials that can be effectively recycled have been pulled from the wastestream, other alternatives besides landfilling should be promoted.

Composting of biodegradable plastics is one such alternative. Biodegradable plastics are becoming available, and are nearing broader commercial market breakthroughs. Two particularly promising areas are biodegradable food containers (replacing PS), and biodegradable film for bags, particularly yard waste bags. Both of these biodegradable plastic applications are appropriate for composting, assuming the existence of cost-effective composting facilities.

There are a whole host of issues related to more widespread use of biodegradable plastics. For example, how would you sort biodegradable plastics from recyclable plastics on a sort line? Also, as there is a noticeable absence of MSW composting facilities in California, biodegradable plastics would need to be collected through special programs. For now, it seems that discrete biodegradable plastic and composting applications – for example food service, where the biodegradable plastic containers could be collected for a food composting program, and bags for yard waste, where they could be composted with their contents in yard waste composting facilities, are worth encouraging.

Potential conversion technologies that reduce plastic resins to fuel products are another area that could keep non-recyclable plastics from the landfill. If plastics are taken from the end of the sort line, once more recyclable plastic materials are positively sorted out, then, this is a preferable alternative to landfill plastics disposal.

Who should pay for plastics recycling?

In some cases, the cost of recycling plastics exceeds the scrap price recyclers receive. The California beverage container program provides a safety net, the processing fee, to cover costs of beverage container recycling. In some cases, such as film recycling programs for composite lumber, recycling is economic since the end-user is willing to pay enough for the material to cover the recycler’s costs. For other plastic products and container types, recycling is a losing proposition, economically.

The benefits that accrue from recycling – resource conservation, energy savings, reduced emissions, jobs, etc. – accrue broadly to society, and no one entity is interested in bearing the costs, which can be significant to an individual recycler. Broader sharing of plastic recycling costs – not placing the full amount on local governments, or consumers, would be preferred. Like the plastics industry has been doing under AB 2020 for over twelve years, and in some individualized collection programs, the plastics industry may be willing to provide additional support for plastics recycling at the collection level.

What products should use more recycled plastics?

Rather than dictating recycled content levels in certain products, the State should provide incentives to encourage recycled content in a range of closed- and open-loop products. Technologies and markets are changing too rapidly for recycled-content mandates to keep up – the California trash bag law is a prime example. However, there should be some incentives to use recycled content to help promote and encourage existing and new plastic markets.

Considerations for Promoting Plastics Source Reduction

One of the factors discussed frequently when considering diversion policies is that industry does not need additional mandates to promote source reduction. It is argued that the market's economic incentives to source reduce are strong enough to promote source reduction. In most cases this appears to be true, although there are certainly examples where marketing or other interests result in more packaging or product than is necessary. What is missing in waste management policies is a way to effectively measure and promote source reduction and to appropriately reward or credit source reduction efforts.

A collaborative industry task force may want to consider developing and promoting source reduction through metrics such as waste intensity and resource productivity. Waste intensity is the ratio of the amount of waste generated per unit of production or service output, such as packaging to product ratios. Resource productivity is the ratio of production or service output per material input, for example, the amount of heat conservation provided per pound of insulation. Both of these measures could be used to help reward and promote source reduction, perhaps through industry reports on plastic source reduction efforts.

If products are manufactured out-of-state, what is the impact on California's plastic markets?

One of the ironies of California's plastic laws is that, while they may have relatively little impact on plastic markets and products in California, they do have an impact at the national level. This helps keep California at the forefront of recycling policy, however, if the goal is to increase the use of plastics recycled in California, the policy is not very effective. There are two possible approaches to address this issue. One is to expand this California dialogue on plastic policies to the national level, the second, is to identify and implement policies that will emphasize, to the maximum extent possible, California plastic markets. California policymakers should consider whether a combination of approaches is appropriate.

How do we balance and measure plastics source reduction and recycling goals?

Source reduction is at the top of the conventional waste management hierarchy. It is also the most difficult option to measure, and thus to recognize. As a result, this preferred option often is given lower priority or emphasis than recycling and composting, which are much easier to monitor and measure. Plastics, which are almost always source reduced over other material types, are the main loser in this dilemma. In some cases, efforts to quantify or encourage source reduction actually discourage it – for example, the California RPPC law creates disincentives to source reduce plastic containers when they are introduced. Plastics should be appropriately recognized for their source reduction benefits. Use of new monitoring measures, such as resource conservation or waste intensity measures, could help address this issue, as well as checklists or company action plans to validate source reduction efforts.

What is resource conservation as it applies to plastics?

Resource conservation cannot really be fairly examined in isolation of a single material type, such as plastics. There are large substitution, or displacement, effects that impact overall resource conservation. Recognizing that other materials displacement needs to be importantly considered, below are six general goals for resource conservation as they apply to plastics, and other materials, in products and packaging:

- Use less material, especially less raw materials
- Use less hazardous, toxic, or potentially toxic materials
- Reduce materials entering the environment (including landfills)
- Make products last longer
- Make packaging last longer
- Reuse more material
- Recycle, compost, and convert more material.

When considering whether a plastics product, package, or material is achieving resource conservation goals, all of these aspects of resource conservation should be considered and policies should promote the appropriate balance for that plastics material, product, or package.

Do we use mandates or incentives to meet plastic goals?

There are many potential public policy tools that fit between the two extremes of a laissez faire market approach and command and control product or material bans and take-back mandates. Strict mandates have several problems – they are difficult to implement, costly for both industry and government, and often are relatively ineffective in meeting their policy goals. However, with some exceptions, the plastics industry overall is generally not adequately addressing plastics problems on their own.

There are costs associated with plastics production, use, and disposal that are not borne by those who produce the material, or those who use the material. Plastic policies must address these plastic economic externalities if they are to effectively solve plastic problems. Voluntary programs and incentives are generally preferable to mandates, and likely to be more effective in the long-run in meeting policy goals. However, if plastic industry stakeholders are not willing to contribute to, and work together towards developing long-term plastic solutions, some mandates could ultimately be necessary to achieve some plastic policy goals.

What should the criteria for evaluating plastic policies be?

Once the goals for plastic policies are agreed upon, the next step is to identify criteria to evaluate the proposed policies. No single policy can maximize these criteria simultaneously, policymakers must make trade-offs between criteria, maximizing all of them to the extent possible. For example, a plastics policy that is more complicated and difficult to administer could provide better flexibility and broader applicability. To the maximum extent possible, plastic policies and programs should strive for:

- Shared responsibility, between industry, consumers, and government, leading to a more equitable distribution of responsibility for the full environmental and economic consequences of a plastics product or package
- Broad applicability, as opposed to plastic resin, or plastic product specific policies. This must be balanced by the need to accommodate unique specific resin characteristics, while avoiding overly specific or prescriptive plastic policies
- Creating incentives for the “right” plastic actions (i.e. meeting plastic policy goals) while minimizing unintended consequences
- Flexibility, allowing for plastic technologies and markets to rapidly change
- Compatibility with current and future waste management systems

Should Certain Plastic Products or Packaging Be Banned?

Bans on the sale of plastic products are sometimes proposed as a means to solve plastic issues. Two potential plastic bans are most often mentioned – banning PVC containers, which are a contaminant in PET recycling, and banning polystyrene food service containers, which are not recycled, and are a major component of litter in storm drains. While bans may help solve immediate problems, they are generally not an effective long-term solution. Banning PVC containers would help reduce the cost of PET recycling and contamination from PVC. However, it is very likely that in the near future, some other new container type would be developed that would also create contamination problems. A more effective solution than banning PVC containers might be to pass on the extra costs of recycling PVC containers (or other containers with higher costs) in a processing fee (as should occur in 2004 under AB 2020). Similarly, banning PS food service containers would reduce the amount of PS entering storm drains, however the PS containers will be replaced by some other container type that may lead to other problems or negative impacts. Encouraging and promoting alternatives, such as biodegradable food service containers used in conjunction with food composting, and extensive litter reduction efforts, could be more effective than bans in solving problems posed by plastic materials. The problem with bans is that they are narrow in scope – addressing a very specific problem with a very specific solution. This narrow focused approach is an ineffective means to address a material with such global applications and ramifications as plastics. Bans should only be used by policymakers as a last resort.

- Political and social acceptability
- Reducing administrative implementation and transaction costs
- Including measurable costs and benefits to judge policy effectiveness
- Good “science-based” decisions, where a valid scientific basis exists
- Minimizing environmental and health risks
- Fairness, simplicity, and enforceability.

New plastic policies must be flexible. Plastic policies should not lock in on a set solution for a particular type of plastic – as the technologies and markets at all steps along the plastics spectrum are continuously changing, and policies that freeze in on a particular option are almost guaranteed to eventually fail. Plastic policies should also take into consideration business’ concerns of competitiveness, increasing the costs of doing business, and political realities surrounding increased fees and taxes in a depressed economic climate. Plastic is a highly diverse material, and any attempt to address plastic policy issues must include a diverse array of alternatives.

There are lessons learned from our experiences with the four existing California laws affecting plastic, and we should use this knowledge as we evaluate new plastic policies:

- A piecemeal approach to plastics policy does not work
- Markets change, and mandates may become ineffective or unnecessary over time
- New uses for plastics – both virgin and recycled – are continuously being developed, and changing the landscape for plastic markets
- Because plastic products and markets are changing rapidly, plastic recycling will need extra time, and extra effort to try to catch up to sales
- It is difficult to single out plastic material types and single plastic resin types in policy, and this could lead to unintended consequences, substitution of plastic materials, and inequities
- Administering complex public policy environmental laws is difficult, expensive, and unwieldy
- Left to the legislative process, a public policy may be amended beyond recognition, and lose track of its original public policy intent.

Modifications to Existing State Plastic Laws Need to Be Made

Current legislation can be improved, as it relates to plastics and plastic recycling. Recommendations for the four existing laws addressing plastics waste, recycling, and markets are provided.

AB 939: Recycling and Landfill Legislation

- *Address current AB 939 incentives that maximize the quantity, but not the quality, of recycled materials.* AB 939 is a weight-based diversion program. Plastics, with their light weight, will never contribute to a significant portion of AB 939 diversion, especially at the household/curbside level. Unfortunately, the current law creates incentives to maximize collection weight at the curb, for example through single stream collection programs. While these programs can increase the volume and weight of material collected, they can reduce the quality of material collected, and thus the material value and market potential. Plastics, with its high sorting costs and contamination issues, are particularly sensitive to this problem. The CIWMB and DOC should develop and expand policies and programs to increase the quality of plastics collected at the curb using incentive payments, education for recyclers, promotion of best practices, and grants for sorting and cleaning equipment, etc..
- *Support changes in AB 939 definitions (AB 2770, Matthews) to allow some diversion credits for conversion.* AB 2770, currently active in the 2001-2002 legislative session, allows the CIWMB to establish programs for the research, demonstration, evaluation, and promotion of new and emerging technologies that convert solid waste materials into new sources of energy, alternative fuels, chemicals, and other products. The law would allow cities and counties to use diversion for up to 10 percent of their diversion credits as long as certain conditions were met, such as using only post-recycled materials that would otherwise go to the landfill. While directed primarily at biomass conversion, there are also conversion technologies in development that convert plastics to low-sulfur diesel fuel. New plastic recycling technologies and plastic conversion technologies should be formally explored and supported by the State as an alternative for plastics that cannot be currently recycled, and would otherwise end up in landfills. Another alternative that could be pursued for non-recyclable plastics is as a fuel source in cement kilns and other similar applications.

SB 235: Rigid Plastic Packaging Container Legislation

- *Promote programs to boost the RPPC recycling rate beyond 25 percent through collection options, education, grants for sorting and cleaning equipment, and recycling incentive payments.*
- *Make legislative and administrative changes to streamline implementation of the RPPC law.* Legislation proposed in February of this year, SB 1970, Romero, was intended to increase flexibility and improve the RPPC law to make it easier for industry to meet law requirements, and easier for the CIWMB to implement the law. However, the bill was essentially scrapped, and all provisions relating to the RPPC law removed largely because industry did not want to validate the law by approving the suggested changes, but rather try for a full repeal of the law.
- *Repeal the ineffective RPPC law once a more comprehensive approach to plastics resource conservation, recycling, and market development is in place.*
- *Apply CIWMB staff and/or funding that is currently used to administer the RPPC law to supporting new plastic initiatives.*

SB 951: Plastic Trash Bag Legislation

- CIWMB staff research and industry comments over the last year indicate that there is no longer a need for the recycled content trash bag law to meet the intent of encouraging the diversion of polyethylene from landfills by establishing a market in trash bags. Markets for film plastic have increased significantly over the last two years with advent of the composite lumber industry. It has become increasingly difficult for plastic bag manufacturers, especially larger manufacturers, to obtain sufficient quantity and quality of recycled resin to meet the recycled content requirements. In addition, the law only applies to a subset of trash bags, and has relatively little impact on markets for recycled plastic film in California. However, if the law is simply repealed now, there may be little incentive for industry participating in a broader, more holistic approach to plastics resource conservation and recycling that would be developed through a collaborative process. The trash bag law

should stay on the books for now and CIWMB staff should continue to work with the DGS to promote and expand State purchases of recycled content bags. The trash bag law should ultimately be repealed when a broader plastics initiative is in place.

- *Repeal the trash bag law as it is now written, eliminating the certification program, once a more comprehensive approach to plastic recycling and market development is in place.* Direct the CIWMB to work with the DGS to develop a list of approved trash bag brands for sale to the State. In addition to trash bags with recycled content, examine the source reduction aspects of trash bags, or bags made of biodegradable materials in order to develop a list of “environmentally friendly” trash bags for State procurement.
- *Apply CIWMB staff and/or funding that is currently used to administer the trash bag law to supporting new plastic initiatives.*

AB 2020: Beverage Container Recycling Legislation

- *Make minor improvements in the program, as already proposed in current legislation and administrative changes, such as:*
 - Implement a single commingled rate for # 2 colored and # 3 to # 7 plastics.
 - Implement plastic incentive payments for recyclers (SB 1733, Sher). SB 1733 includes a provision, to the extent funds are available, to establish a plastic beverage container recycling incentive payment to be paid to certified recycling centers. The bill also increases processing payments made to certified recycling centers. These payments are intended to increase recycling rates for plastics, and could be used to support and promote plastics recycling. Implementation of this program should be done in a way that is equitable and promotes higher quality plastics recycling.

- Modify the processing fee for plastics (SB 1733, Sher). SB 1733 also includes provisions to change the processing fee paid by beverage manufacturers such that container types with a lower recycling rate pay a higher processing fee. This would create further incentives for plastic container manufacturers to switch from less recycled plastic resins (# 3 through # 7) to more recycled plastic resins (# 1 and # 2), or to work to increase recycling rates for those less recycled containers. This bill establishes a graduated processing fee payment. At the low end, container types with a recycling rate of 60 percent or greater would only pay a processing fee of 15 percent of the processing payment to recyclers. At the high end, container types with a recycling rate of less than 20 percent would pay a processing fee of 50 percent of the processing payment to recyclers.
 - Recalculate the processing fee in year 2003 based on the cost to recycle each plastics resin type. During 2003 the DOC will recalculate the cost of recycling in order to establish new processing fees and payments for implementation on January 1, 2004. For the first time since new containers were added to the program, the DOC will establish a separate processing fee for each plastics resin type (currently, all plastic processing fees are calculated using a plastics recycling cost of \$642.69). It is expected that the cost of recycling for beverage containers of plastic resin types # 3 through # 7 will be much higher than the current costs for PET plastics, and thus processing fees and processing payments should increase for those plastic containers. New processing fees can have two impacts, both of which should help increase overall plastic beverage container recycling. First, it can create further incentives for manufacturers using # 3 to # 7 resins to switch to PET and HDPE plastics, and second, it can provide additional, necessary support to recyclers to sort and recycle these smaller-volume plastic resin types.
 - Increase market development support for plastics through grants (SB 1857, Sher). SB 1857 would allocate \$10 million annually, until January 2006, for the DOC to issue grants for market development and expansion-related activities for recycling beverage containers. The legislation, part of a joint DOC/CIWMB effort, is intended to provide funding for research and development in the sorting, collecting, processing, shredding, or cleaning of beverage containers; identify and expand new markets for recycled beverage containers; and develop new products using recycled beverage containers. Plastics should be earmarked as a primary beneficiary of funding if this bill passes. Criteria for allocating the funds should take into account existing recycling efforts, and ensure that funds are equitably distributed and that distributions do not disadvantage established programs and businesses.
- *Initiate or reinstate programs as follows:*
 - Conduct a litter study, emphasizing the contribution of beverage containers to litter entering the storm drain system.
 - Expand the development of current new initiatives to help fund collection of plastic beverage containers at sporting events, parks, gas stations etc.
 - Use unredeemed plastics CRV to promote plastic beverage container recycling and litter reduction and enact legislation to allocate funds to support those efforts.
 - *Give the beverage container program time to adjust to the new plastic containers and changing markets* before making any additional changes to the beverage container recycling program, formally reevaluating the status of plastic beverage container recycling in 2005.

The Four Key Components to California's Long-Term Plastics Solution



There are Four Key Components to a Long-Term Plastics Solution for the State

A long-term approach to promoting plastics resource conservation, increasing plastics recycling, and increasing the use of recycled plastics has four key components. Three legs of the solution are policies for: (1) plastics collection and market development, (2) plastics public information, relations, and education, and (3) plastics research/development and new technologies. These three policy legs are supported by a fourth overall new long-term plastics shared responsibility policy framework that includes funding initiatives to finance programs in the first three areas.

Plastics Collection and Market Development

Expanding collection is the first step to increasing plastics recycling. The key to collection is not just obtaining as much material as possible, but obtaining material of a sufficient quality and quantity. The costs of collecting and sorting plastics are high, especially relative to the value of the material. In addition, current market forces such as increases in the number of single-serve containers, new resin colors, and resin barriers can potentially increase plastic recycling costs further. Policies to promote plastic collection and markets should increase quality and quantity, and reduce costs. Policies should also be equitable, for example not simply subsidizing new operations at the expense of existing businesses. Plastic collection improvements will also stimulate plastic markets, since better quality material is more likely to attract the attention of buyers, and obtain a higher price. The following five policies are intended to improve plastics collection:

- *Provide additional funding and research support for collection and processing technology development.* Emphasize efforts that will improve the quality of incoming materials and increase throughput (for example automation of processing lines). This policy could support research, pilot projects, and equipment purchases. An important aspect is that the policy should not jeopardize or put existing recyclers at a competitive disadvantage. One option, in addition to funding research at universities and other institutions, is to provide a payment to recyclers and processors, based on tons of plastic recycled, with the funds to be used for specified purposes. The recipient would be responsible for reporting recycling quantities and how the funds were used. The policy could use some SB 1857 funds initially, until long-term funding mechanisms are in place. This funding policy could be directed at plastic beverage containers, as well as other plastics collection such as film and polystyrene.
- *Develop and disseminate “best practices” in collection and processing systems to further support the economical collection of clean plastic streams.* The American Post-Consumer Plastics Recyclers (APR), and Institute of Scrap Recycling Industries (ISRI), have developed criteria and standards for collection and processing plastics. These criteria should be expanded or modified, as necessary, to reflect specific conditions in California, and then disseminated to local governments, waste haulers, and recyclers. In addition, the CIWMB and DOC should work with curbside programs to develop guidelines and information on improving the quality of plastic materials coming through the system.
- *Provide loans and grants for the purchase of collection and processing equipment such as automated lines, washing systems, etc.* (Use some SB 1857 funds initially until long-term funding mechanisms are in place). This policy would have to be implemented carefully to avoid putting companies that have already invested in such equipment at a competitive disadvantage.
- *Develop plastic material quality standards for recycled plastics (with an industry working group).* Again, building on existing standards from the APR and ISRI, refine and promote quality standards for recycled plastics and design for recycling. These standards should make it easier for recyclers to grade their materials, and reduce the number of loads that are turned down by manufacturers because they do not meet standards. Encourage manufacturers to “design for recycling” and minimize the environmental impact of packages, including eliminating hazardous or toxic constituents in packaging. Promote and expand on existing design for recycling initiatives and standards, such as those of the APR, ISRI, and U.S. EPA.
- *Significantly increase plastic beverage container nonresidential recycling with expanded collection at points where many beverages are consumed – parks, baseball fields, soccer fields, schools, gymnasiums, swimming pools, professional sporting venues, shopping malls, airports, etc.* Recycling of plastics, especially PET beverage containers are not keeping up with sales. Beverages are being consumed away from home at various locations, often with little, or no recycling opportunities. Most consumers will not bother to bring their plastic containers home in order to recycle them, they are just thrown away on-site. Every community in California has dozens (or more) nonresidence locations at which plastic containers are being thrown away every day, and especially every weekend. Establishing collection programs (including weekend collection) for recyclable plastic containers at these locations could potentially provide a boost to plastic beverage container recycling. These nonresidential plastic collection programs could be established within AB 2020 as part of the \$10.5 million expended annually for cities and counties, part of the \$500,000 in grants, and/or the proposed \$10 million annually in SB 1857. As a first step, the DOC could solicit proposals from recyclers, community groups, and local governments for pilot collection programs. After implementing pilot projects in a few communities, the most effective collection programs could be expanded to other cities/counties throughout the State. Smaller local recycling companies may be in a good position to provide flexible and tailored recycling programs for California communities.

Plastic Markets Need to Be Encouraged

Market development policies generally consist of three types – recycled content mandates, buy-recycled programs, and support for manufacturers of recycled products. California has policies and programs in place in all three areas. The recycled content requirements for plastics have been somewhat disappointing regarding their impact on plastic markets in California. Unlike the glass and newspaper recycled content laws, where materials collected in California are used in California products, much of the recycled content plastic for plastic containers is collected and made into containers out-of-state. The buy-recycled program is improving, but it could be stronger to support manufacturers of recycled plastic products. The DOC and the CIWMB assistance programs for recycled product manufacturers are strong – the Recycling Market Development Zones and loan program, operated by the CIWMB, and the extensive market development outreach and grants programs operated by the DOC, are compatible programs and both support manufacturers of recycled products. Three policies to promote plastic markets are:

- Expand, enhance, and enforce existing government recycled content purchase policies and environmentally friendly procurement programs for plastics.
- Create positive incentives for companies selling recycled plastic content products (both open- and closed-loop), such as tax credits, tax deductions, and exemption from fees. Do not use recycled content mandates for plastic products. One alternative within the beverage container program is to reduce processing payments for manufacturers of plastic beverage containers that use recycled content at, or above, a certain level, say 10 percent. Another option would be for companies to certify a content level above some established percentage, and existing California sales quantities, and receive a tax credit or deduction per ton of recycled resin used. The deduction or credit could be greater if the recycled plastics came from California. This initiative would require random audits to verify the recycled content claims.
- Develop public policies that help level the playing field for biodegradable plastics. Without government stimulation, the current price differential between petroleum-base plastics and biodegradable plastics is likely to hinder the growth of biodegradable packaging and other applications in the short-term. Research and development tax credits, or other jump-start subsidies need to be considered to help narrow this price differential. These options could include user taxes on on-degradable plastic bags and/or tax credits for biodegradable plastic bags.

Plastics Public Information, Relations, and Education

Historically, there have not been clear and consistent public education and public relation efforts to promote plastics recycling and resource conservation. Recycling education efforts usually consist of a patchwork of uncoordinated efforts between local governments, industry, the DOC, the CIWMB, and environmental education non-profit organizations. A coordinated outreach effort is essential to help boost recycling rates and reduce confusion about plastics recycling among consumers.

The chasing arrows plastics resin code system provides a false sense of recycling security for industry. Only HDPE and PET plastics are recycled with any significant frequency, yet many consumers are led to believe that any container with a chasing arrow code is recyclable. Furthermore, some manufacturers use claims of recyclability to help sell their products when in fact, the products are not recyclable. False recycling claims, or erroneous claims about recyclability on packaging, mislead consumers and hurt recycling efforts for those plastics that can truly be recycled. There is a need for clear, consistent messages on plastics recycling with an emphasis on truth-in-advertising.

The impression from much of the industry-based recycling publicity is that plastics are more recyclable than they really are. These messages are counterproductive to the broader plastic recycling movement and create confusion among consumers about what plastics are effectively recyclable. Because of these false messages, many consumers are under the impression that they should have recycling opportunities for all plastics, even when it does not make technical or economic sense. In addition, consumers become even more disenchanted when they find out that some plastic materials that are being dutifully collected are not actually being recycled.

Expanding plastics education efforts must be different than most of the past efforts to-date. There is a strong need, and an insatiable demand, for ongoing education programs to identify what is recyclable, where it can be recycled, why it should be recycled, and why plastics and other materials should not be littered. These efforts should be coordinated and extensive. A potential model is the aggressive statewide anti-smoking campaigns of the last several years. The following nine policies and programs for plastics education, public relations, and information should be pursued:

- *Increase resource conservation and recycling education coordination efforts through collaboration between state and local government, environmental groups, and industry.* Create a “Plastic Recycling Council” consisting of representatives from state and local government, industry, retailers, recyclers, environmental groups, consumer groups, educators, and public relations firms. The Council could be funded through government and public and private entities to conduct public awareness campaigns, and initiate joint industry/government outreach campaigns to increase plastics recycling and resource conservation. Innovative initiatives should be included such as lotteries or prizes for certain plastics.
- *Use additional bottle-bill surplus funds in the near term for expanded plastics beverage container recycling publicity and public education, especially on litter issues.* Continue the extensive education efforts that were initiated last year to support container expansion, especially for recyclable plastic types.
- *Identify the specific reasons that consumers are not recycling certain plastics, and identify potential barriers and problems that should be addressed in outreach efforts for different plastic types.*
- *Enforce truth-in-advertising about recyclability of plastics packaging, and other plastic packaging characteristics, such as biodegradability.* False advertising claims should be identified and forwarded by the CIWMB to the State Attorney General’s Consumer Protection and Business Information program.
- *Develop a California Curbside Label for plastic products that can be recycled in every curbside program,* as a way to motivate manufacturers to increase recyclability of their packaging.
- *Develop a “designed for recycling” seal of approval that could be awarded to plastic containers for sale in California with high levels of recyclability.* Develop an innovative plastics packaging award as part of the CIWMB’s Waste Reduction Awards Program (WRAP) for new packaging that has high recyclability, recycled content, or source reduction features.
- *Develop and publicize a list of recycled content and environmentally friendly plastic products for state and local government procurement.* In addition, publicize the list more broadly, for example to large companies and consumers.
- *Increase litter-reduction education efforts, as part of the above efforts, through collaboration between state and local government, environmentalists, retailers, and industry.* Conduct an extensive public education effort on litter, and the impacts of litter, particularly plastics litter. Identify key age and interest groups to target in the campaign, and tailor messages to those audiences. Evaluate behavioral reasons for littering, and address those issues in the campaign. Work with existing organizations, such as Keep America Beautiful (KAB), Keep California Beautiful (KCB), the California Coastal Commission, industry, retailers, environmental and community groups to promote anti-litter efforts.
- *Explore making litter a civil offense, and begin instituting litter tickets, like parking tickets.* Also, consider the concept of an environmental court for pursuing environmental crimes such as litter and solid waste violations.

Plastics Research/Development and New Technologies

There is a tremendous need to provide timely policy and program aid, legislative backing, and financial support to both emerging, and presently commercialized, plastic technologies. Advancing new plastic technologies will require significant leadership, and technical and financial assistance from both the CIWMB and the DOC. There has not been enough attention paid to advancing plastic technologies that have tremendous promise to help solve many of the State's fundamental plastic issues. The same California that bore a Silicon Valley world-class computer industry surely can lead the world in advancing state-of-the-art plastic technologies.

Plastic conversion technologies, biodegradable plastics and composting, and other new plastic recycling technologies offer much promise to help mitigate plastic environmental issues, develop new plastic end products, and increase plastic diversion from landfills. However, their actual environmental performance, cost, and impacts on existing State goals and programs have yet to be determined. Both the CIWMB and the DOC must get involved in these plastic technology initiatives, both to help lead, and to help evaluate, these efforts. The State needs to carefully evaluate and balance the impacts and effectiveness of new plastic technologies. New technologies will not solve all of our plastics problems, and in fact may create some other new problems, but technology is a critical piece of the long-term plastics solution.

New plastic technologies have tremendous implications for local government jurisdictions. Currently, many waste haulers will not generally pick up all types of plastic because there are no markets for it. If there were effective and economic plastic conversion technologies, local jurisdictions would have to be stimulated to collect all plastics, including film plastics and packaging, with the all plastics bottle at curbside campaign, giving way to a new all plastics at the curbside crusade, with a positive sort at the back end for PET and HDPE plastics. Identifying, collecting, and sorting plastics for conversion technologies and composting biodegradable plastics are significant public policy issues that must be addressed.

Future plastics technology will likely drive future plastics collection practices, and this will be particularly true on a jurisdiction specific basis as local entities begin to pilot new plastic processes. Local jurisdictions will need help with funding their future large-scale plastics collection operations so as to be able to obtain sufficient volumes of plastic materials to overcome economic scale problems. A key issue is that plastics conversion and even biodegradable plastics and composting should not replace higher-value plastics recycling. Plastic materials should only go to conversion and biodegradable plastics and composting when they cannot be recycled.

■ *Provide support for and undertake forums and workshops on plastic initiatives, including promising and significant plastic technologies, such as plastic conversion technologies, biodegradable plastics and composting, auto shredder plastics recycling, commingled/mixed plastic processors for recycled value-added products, and many others currently, and to be determined. Just as the CIWMB in the past few years spearheaded several initiatives on conversion technologies in general, it, and the DOC, now need to begin to these plastic technology initiatives, including the following examples:*

- Work with other State agencies on plastic conversion technologies, biodegradable plastics and composting, and other technology issues and form an external industry advisory group for plastic technologies and sub-technology applications.
- Plan public education workshops and symposia that focus on City and County officials, and the general public, working with private industry partners regarding specific information needs regarding plastic conversion technologies, biodegradable plastics and composting, and other new technologies that can keep plastics out of our landfills and environment.
- Develop a budget change proposal seeking General Fund support for a grant program for small-scale demonstration projects that use plastic conversion technologies, biodegradable plastics and composting, and other new plastic technologies.

- Work with the California Pollution Control Financing Authority, Technology Trade and Commerce Agency, and other applicable State agencies to ascertain existing funding availability for plastic conversion technologies, biodegradable plastics and composting, and other new plastics technologies; work with applicable Federal agencies on existing funding opportunities for California plastic technology projects.
- Work with Cal/EPA to set up a streamlined permitting process for assisting project proponents of appropriate plastic technology projects.
- *Support plastics conversion by addressing the barriers that limit further commercialization of plastic conversion technologies.* This includes technical and financial assistance with (1) financing for commercial scale plastics conversion facilities, (2) large scale plastic collection practices, (3) permitting plastic conversion and other new facilities, and (4) further statutory and/or regulatory relief, as appropriate, or required.
- *Provide government stimulation to address the current price differential between petroleum-based plastics and biodegradable plastics.* This differential is likely to hinder the growth of biodegradable packaging and other applications in the short-term. The CIWMB and the DOC need to consider ways to help narrow this price differential now, including the use of research and development tax credits or other jump-start subsidies.

A Structured Collaborative Process Needs to Begin Now to Develop Shared- Responsibility for Plastics in the State

The only way to develop effective, long-term solutions to the State's plastic issues is through a highly structured collaborative approach involving all vested parties. Stakeholders would include industry (resin, container, and product manufacturers), distributors, retailers, recyclers, processors, reclaimers, state and local governments, environmental groups (involved in solid waste, water quality, and coastal issues), consumer groups, and other interested individuals and organizations.

While the CIWMB and the DOC could try to independently develop policy solutions, mandates, or legislation for long-term policies to increase plastic recycling, resource conservation, and use of recycled plastics, the political process would likely manipulate any carefully thought out policy package that does not have broad stakeholder support, diluting the intended policy effects. It will be much more effective to have all key stakeholder parties develop, and generally agree, on an approach, and help execute it (perhaps initially with little, or no, legislative mandates). The final outcome of the collaborative process should be determined by the stakeholders. The CIWMB and DOC can begin now to draw on the momentum established through the white paper process to help initiate and formalize a collaborative process.

Initiating a Collaborative Process for Plastics Shared-Responsibility

Drawing on participants already involved in this white paper process, those working with the DOC and the CIWMB on other plastic issues, and any other interested stakeholders, develop a list of potential participants. The process should be inclusive, accepting any members that are interested in actively participating, and encouraging participation from all involved parties, particularly those that have not been as involved to-date, such as retailers. The CIWMB and the DOC should support and help facilitate this process. At a start-up meeting, the group should divide themselves into at least four task forces for (1) plastics collection and market development, (2) plastics public information, relations, and education, (3) plastics research/development and new technologies, and (4) long-term shared responsibility plastic policies and associated funding. The collaborative process could be established voluntarily, or it also could be established through legislation that would allocate funding and identify participants and a timeline.

Guidelines for a Collaborative Process for Plastics Shared-Responsibility

The task forces should meet regularly to (a) identify and develop specific goals, policies, and initiatives that will meet the State's objectives for plastics, including increasing plastics resource conservation, increasing plastics recycling, and increasing the use of recycled plastics; (b) develop and support legislation, if needed, to implement new plastic policies and programs; (c) implement plastic policies and initiatives, as appropriate; and (d) report on progress to the overall group. Each subgroup should develop specific objectives building on relevant issues, policy goals, and policies presented in this white paper. The collection and market development group may want to identify recycling rate targets for different plastic products and packaging.

The first three groups, to a greater extent, will be considering policies and initiatives that are somewhat less controversial, and that could be implemented in the near-term. The fourth group will be considering more controversial policy options, and on a longer timeframe. This fourth group, in particular, should take care to acknowledge the input of all participants, and all subgroups.

Plastic Policy Options for a Collaborative Process to Consider

Some of the policies discussed in this white paper could serve as a guide for the first three task force groups. Most all of the future plastic policies require some funding. Although some initiatives can be funded from existing sources, there still will need to be new sources of funding for many of the initiatives. The long-term policy group should discuss and consider a range of alternatives that could generate funds to support adopted policies, as well as new future initiatives.

Policies should attempt to internalize plastic's externalities, while recognizing the many benefits of plastics. Any new policies that require someone to pay are inherently controversial, especially in a time of economic recession. However, postponing the plastics issue is irresponsible, and is likely to result in greater total costs in the long-term. The ultimate plastic policies that are most likely to be successful will be those that share costs between all responsible parties and provide a mix of alternatives.

The final result of the collaborative process would be implementation of a new set of policies and programs that optimize the use, recycling, and disposal of plastics in California. The process itself should also result in better working relationships between various plastic stakeholders, enabling them to identify and implement mutually beneficial initiatives of their own, if possible.

Should Landfill Tipping Fees Be Increased in the State?

Landfill tipping fees in California are relatively low - averaging approximately \$35 per ton in 2000. With such a low cost, it is often easier and more economical to simply throw plastics away. A higher tipping fee would create greater incentives to recycle, or otherwise divert plastics, as well as other materials. Higher tipping fees also would generate additional revenues that could be used to support new plastic programs and policies.

One drawback of this policy option is that raising the fee to a high enough level to create an effective incentive to increase plastics diversion is likely to be politically unacceptable. A lower fee increase would be more politically acceptable, but such a lower fee would not create enough incentives to change behavior, but would rather generate funding.

Increasing the landfill tipping fee places the burden of increased fees on the consumer, hauler, and local government. Increasing tipping fees may be considered as part of any plastics funding package, however it should be recognized that there still will not likely be an adequate pricing signal passed through to manufacturers to reduce wastes with a probable landfill tipping fee increase.

Should Plastic Manufacturers Be Assessed Additional Plastic Payments?

Some members of the plastics industry have already made significant contributions to plastics recycling in California. There is still an opportunity for industry to provide increased funding support, especially as part of a broad collaborative initiative that is likely to be more successful than the independent, and more discreet industry efforts undertaken in the past.

There are many possible options by which industry could expand their support of plastics initiatives. These include: funding specific earmarked programs, voluntary deposit systems (payment of an amount to be determined) paid into a plastics fund based on sales in California, or mandatory fees or deposits. Mandatory fees will be unpopular among industry groups and complicated to implement for both government and industry. However, it is possible to develop fee systems that would be fair and acceptable.

Mandatory deposits could be complicated, unless blended into the existing bottle bill system. There may be some products or packages for which a voluntary deposit system is appropriate. These systems should be pursued by those industries. Two examples of potential voluntary deposits are the Alberta Dairy Council Plastic Milk Container Recycling Program, and deposits on car batteries to encourage returns to the retailer. Industry groups may also choose to self-fund initiatives for their products and packaging, such as the Plastic Loosefill Council's recycling program for packaging peanuts. These programs all provide funding, however, for fairly specific products and packaging.

For more generalized industry support of plastics recycling and resource conservation, one alternative would be to establish a payment based on sales of plastic goods in California, which would then be used to fund new plastic policy initiatives. Like the National Packaging Covenant in Australia and New Zealand, the fees could be based on sales, and could be supplemented by State funding. The task forces could develop specific criteria for uses of the funds. Companies could choose to contribute to the fund voluntarily, or the fee could be mandatory. This type of fee would be much simpler to implement than an advanced disposal fee on individual products or packages sold in the State.

The State Needs Smart Plastic Policies

The agenda for future California plastic policies and programs should be one of "smart policies" that entail true collaboration with industry in order to establish a policy framework for optimizing and managing the State's entire plastics stream, from production and use, through recycling and the use of appropriate technologies, and finally disposal. Smart policies would set aside proforma-business and environmental positions, and let the collaborative process follow scientific data and analyses, and good public policy concerning plastics, wherever that may lead. In managing plastics, industry should learn to speak the vocabulary of consumer and environmental benefits and protection.

Smart plastic policies would consider helping level the secondary/virgin and recyclable/non-recyclable material playing field so as to reflect the true and full costs of plastic materials through their entire lifecycle. Market forces can slowly change plastic public policies, but smart plastic policies can help catalyze the development of breakthrough plastic technologies so as to quickly gain their environmental benefits for the State.

Smart policy plastic stakeholder collaborations should entail more-thoughtful arguments that go beyond simple questions of cost to industry and consumers, but also acknowledge quantifiable and non-quantifiable costs and benefits to the State at large. Also, smart policies should meet standards for balancing costs and benefits, and should include other factors such as fairness, lifestyle, and impacts on smaller companies.

Smart policies would acknowledge the inevitability of change from our current, ineffective status quo plastic policies, and focus more on helping to develop new and better policies and programs to manage plastics. Smart plastic policy efforts would spend less time and money on whether we need new plastic policies in California, and more resources spent on what the new policies would be, and how they would work.

Summary of Plastic Policy Options

Policies and Programs	Lead Agency	Time Frame	Ease of Implementation	Cost	Increase Recycling	Increase Resource Conservation	Increase Use of Recycled Plastic	Requires Legislation
Modifications to Existing Laws								
1. Address AB 939 Incentives	CIWMB	Medium	Moderate	Moderate	Direct	Direct	Indirect	Possible
2. Legislate Changes in AB 939 Definitions	Legislature	Medium	Moderate	Low	Indirect	Indirect	Direct	Yes
3. Promote RPPC Recycling Rate	CIWMB	Medium	Moderate	Moderate	Direct	Direct	Indirect	No
4. Streamline RPPC Law	CIWMB	Medium	Difficult	Low	Indirect	Indirect	Indirect	Yes
5. Replace RPPC Law with New Initiatives	All	Long	Difficult	Low	Indirect	Indirect	Indirect	Yes
6. Redirect RPPC Staff	CIWMB	Long	Easy	Low	Indirect	Indirect	Indirect	Yes
7. Work with DGS for Trash Bag Procurement	CIWMB	Short	Easy	Low	Neutral	Indirect	Indirect	No
8. Replace the Trash Bag Law with New Initiatives	All	Medium	Moderate	Low	Neutral	Neutral	Neutral	Yes
9. Redirect Trash Bag Staff	CIWMB	Medium	Easy	Low	Indirect	Indirect	Indirect	Yes
10. Implement Commingled Rate for mixed #2 to #7	DOC	Short	Moderate	Low	Indirect	Indirect	Indirect	No
11. Legislate Plastic Incentive Payments	Legislature/DOC	Short	Moderate	Moderate	Direct	Direct	Indirect	Yes
12. Modify Plastic Processing Fee	Legislature/DOC	Short	Moderate	Moderate	Indirect	Indirect	Indirect	Yes
13. Recalculate Processing Fee in 2003	DOC	Medium	Moderate	Moderate	Indirect	Indirect	Indirect	No
14. Conduct DOC Litter Study	DOC	Medium	Moderate	Moderate	Neutral	Neutral	Neutral	No
15. Increase Market Development Support for Plastics	Legislature/DOC	Medium	Moderate	High	Direct	Direct	Direct	Yes
16. Apply AB 2020 Plastic Surplus to Support Plastic Beverage Container Recycling	Legislature	Medium	Moderate	Low	Direct	Direct	Indirect	Yes
17. Reevaluate AB 2020 Plastics in 2005	DOC	Long	Moderate	Moderate	Neutral	Neutral	Neutral	No
Collection and Market Development								
1. Support for Collection and Processing	All	Medium	Moderate	High	Direct	Direct	Direct	No
2. Develop and Publicize Collection and Processing Best Practices	CIWMB/ Industry Groups	Short	Easy	Low	Indirect	Indirect	Indirect	No
3. Implement Loans/Grants for Equipment	CIWMB/DOC	Medium	Moderate	Moderate	Direct	Direct	Direct	Yes
4. Develop and Publicize Plastic Quality Standards	CIWMB/ Industry Groups	Medium	Easy	Low	Indirect	Indirect	Indirect	No
5. Implement New Location Collection Programs	DOC	Short	Moderate	Moderate	Direct	Direct	Indirect	No
6. Support for Processing Agricultural Film	CIWMB	Short/Medium	Moderate	Moderate	Direct	Direct	Direct	No
7. Support for Film Collection from Small/Medium Sized Commercial Generators	CIWMB	Short/Medium	Moderate	Moderate	Direct	Direct	Direct	No
8. Expand Buy Recycled, Procurement Programs	CIWMB/DOC	Short	Moderate	Low	Indirect	Direct	Direct	No
9. Implement Positive Incentives for Recycled Content (Open- and Closed-Loop)	CIWMB	Medium	Moderate	Low	Indirect	Direct	Direct	Yes
Public Information, Relations, Education								
1. Initiate Plastics Recycling Council	All	Medium	Moderate	High	Indirect	Indirect	Indirect	No
2. Conduct Aggressive Advertising Campaign	CIWMB/DOC	Medium	Moderate	High	Indirect	Indirect	Indirect	Possible
3. Apply AB 2020 Surplus for Education	Legislature/DOC	Medium	Easy	High	Indirect	Indirect	Indirect	Yes
4. Identify Barriers to Recycling	CIWMB/DOC	Medium	Moderate	Low	Indirect	Indirect	Neutral	No
5. Enforce Truth in Advertising	CIWMB	Medium	Moderate	Moderate	Indirect	Indirect	Indirect	No
7. Establish California Curbside Label	CIWMB/DOC	Medium	Moderate	Moderate	Indirect	Indirect	Neutral	Possible
8. Implement Design for Recycling Approval, Awards	CIWMB	Medium	Moderate	Low	Indirect	Indirect	Indirect	No
9. Develop and Publicize List of Recycled Content, Positive Products	CIWMB	Medium	Moderate	Low	Indirect	Indirect	Indirect	No
10. Increase Litter Education	CIWMB/DOC	Medium	Moderate	High	Neutral	Indirect	Neutral	Possible
11. Enforce Litter Violations	CIWMB/DOC	Medium	Difficult	High	Neutral	Indirect	Neutral	Yes
12. Promote Research and Unbiased Information Sharing on Plastics Health Impacts	CIWMB	Medium	Easy	Moderate	Neutral	Indirect	Neutral	No
Research/Development and New Technologies								
1. Provide Technical Support for New Technologies	CIWMB/DOC	Medium	Moderate	Moderate	Direct	Direct	Indirect	Possible
2. Provide Financial Support for New Technologies	CIWMB/DOC	Medium	Moderate	High	Direct	Direct	Direct	Yes
3. Evaluate New Technologies	CIWMB/DOC	Short	Easy	Low	Indirect	Indirect	Indirect	No
4. Support Collection for New Technologies	CIWMB/DOC	Medium	Moderate	High	Direct	Direct	Direct	No
5. Support Conversion Technologies	CIWMB	Short	Easy	Moderate	Direct	Direct	Direct	Possible
6. Implement Government Stimulation for Biodegradables	CIWMB	Medium	Moderate	Moderate	Neutral	Direct	Neutral	Yes
7. Conduct Forums and Workshops for New Technologies	CIWMB	Medium	Moderate	Moderate	Indirect	Indirect	Indirect	No
8. Work with Agencies and Industry Advisors to Support Technologies	CIWMB/DOC	Medium	Moderate	Low	Indirect	Indirect	Indirect	No
9. Conduct Technology Education Symposia for Cities and Counties	CIWMB/DOC	Medium	Moderate	Moderate	Indirect	Indirect	Indirect	No
10. Establish Grant Program for Demonstration Projects	CIWMB	Medium	Moderate	Moderate	Direct	Direct	Direct	Yes
11. Work with CPCFA, TCA to Fund Technologies	CIWMB	Short	Easy	Low	Direct	Direct	Direct	No
12. Streamline Permitting with Cal/EPA	CIWMB	Short	Moderate	Low	Indirect	Indirect	Indirect	No
Structured Collaborative Process								
1. Initiate a Collaborative Process	CIWMB/DOC	Short	Moderate	Moderate	Indirect	Indirect	Indirect	No/Possible
2. Form Task Forces and Guidelines	All	Medium	Moderate	Low	Indirect	Indirect	Indirect	No
3. Conduct Task Force Meetings and Policy Development	All	Medium/Long	Difficult	Moderate	Indirect	Indirect	Indirect	No
4. Conduct an International Symposium	CIWMB/DOC	Medium	Moderate	Moderate	Indirect	Indirect	Indirect	No
5. Develop and Implement Long-Term Policies	All	Long	Difficult	High	Direct	Direct	Direct	Possible
6. Develop Measurement Methods and Credits for Source Reduction	CIWMB	Medium	Moderate	Low	Neutral	Direct	Neutral	No
7. Implement Privately Operated Non-Profit Plastics Consortium	Industry Groups	Medium/Long	Moderate	Moderate	Indirect	Indirect	Indirect	No
Funding Mechanisms – Long-Term Policies								
1. Increase Landfill Tipping Fees	CIWMB	Long	Difficult	Moderate	Indirect	Indirect	Indirect	Yes
2. Implement Voluntary Deposit or Fee Systems	Industry Groups	Long	Moderate	Moderate	Direct	Direct	Direct	No
3. Implement Mandatory Deposit or Fee Systems	DOC/CIWMB	Long	Difficult	Moderate	Direct	Direct	Direct	Yes
4. Implement Mandatory Industry Funding Based on Sales	CIWMB/DOC	Long	Difficult	Moderate/ High	Indirect	Indirect	Indirect	Yes
5. Implement Voluntary Industry Funding Based on Sales	Industry Groups	Long	Moderate	Moderate/ High	Indirect	Indirect	Indirect	No
6. Establish Taxes on Virgin Materials/Non-biodegradable Products	CIWMB	Long	Difficult	High	Indirect	Indirect	Direct	Yes

Key to responses:

Lead Agency: All refers to state agencies, legislature, industry, and environmental groups

Time Frame (to initiate program): Short is less than 1 year, Medium is 1-2 years, Long is over 2 years

Ease of implementation: Easy can be done in-house, Moderate requires more significant shifting of staff and/or resources, High requires significant change within agencies or stakeholder groups

Costs (overall expected costs): Low is relatively inexpensive, within existing budgets, Moderate requires some additional budget, High requires significant new funding from one or more sources

Goals: Direct means policy would lead to a direct increase in goal, Indirect means policy would indirectly improve the goal, and Neutral would have no impact

Requires Legislation: Possible means that policy could be done without legislation, but a legislative effort might be beneficial

A Suggested California International Symposium for Plastics

To continue the process initiated by this white paper, and further the development of plastic technologies, plastic issues, and future plastic policies, the CIWMB and DOC, in coordination with other interested organizations, could host an International Symposium (tentatively titled: New Technologies and Smart Policies for Optimizing Plastics Use) during 2003. This Symposium would showcase new and emerging, plastic technologies and policies from around the world and further develop California plastic issues and potential solutions. Efforts from this Symposium would continue through four (or more) ongoing subcommittees to further the optimization of plastics use in California. These four working subgroups would be (1) plastics collection and market development, (2) plastics public information, relations, and education, (3) plastics research/development and new technologies, and (4) plastics product stewardship and shared financial responsibility.

California's long-term plastics management solution should not simply be another "band-aid" repair of our current plastic laws. The solution to California's plastic issues will be a new model, unique to our State, much like the AB 2020 bottle bill and the AB 939 integrated waste management system were over a dozen years ago. The likely California plastics solution will entail a "clean sheet of paper" approach, or a "day one concept", rather than additional focused improvements to our existing plastic institutions. California has the opportunity to be a leader in plastics management, not only among the other states and the federal government, but internationally as well.

There is the need to continue the three-way dialogue of government, industry, and environmentalists that began with this plastics white paper project concerning difficult and often contentious plastic issues. The collaborative process will not be easy, and it likely will take several years to develop, and ultimately implement, effective and long-term plastic policies for California. It is hoped that this plastics white paper initiative is the beginning, and not the end, of a fruitful dialogue and collaboration of all interested plastic stakeholders to seek new solutions for California's plastic challenges.

There is an Opportunity for Industry to Help Initiate Plastic Solutions

California's long-term plastics solutions need not be legislatively mandated or even government directed. There are numerous examples internationally of industry-led initiatives that in which a private consortium organizes a collection and funding effort. In some cases such as British Columbia, Canada's household hazardous waste programs, and Manitoba, Canada's product stewardship system, industry is given a legislative mandate to meet a certain goal, and is given the leeway to choose the approach. In other cases, such as Alberta, Canada's milk container recovery system, and New Zealand and Australia's packaging covenant, industry has taken the initiative upon themselves, sometimes as a way to avoid legislative mandates that may be more onerous.

These privatized initiatives provide a potential model for California's efforts to optimize plastics use, recycling, and disposal. Typically, an organizing board is established that includes government, industry, and environmental representatives. Industry would develop collection, recycling, or other programs, and establish a membership fee or other funding mechanism to support those programs. A privately established system has the advantage of increased flexibility, lower administrative costs, and it allows industry greater control over the types of programs that are funded. Such a system would also provide an ongoing forum to discuss and promote plastics initiatives among interested stakeholders.

The four suggested plastic task forces of this white paper could be organized under a private, nonprofit corporation that is comprised of a board of directors with nine, or more, members. The board seats could include (1) state government, (2) local government, (3) environmentalists, (4) retailers/consumers, (5) resin manufacturers, (6) container manufacturers, (7) packaging manufacturers, (8) product manufacturers, and (9) recyclers/processors. Each board seat could provide funding to the nonprofit corporation in relation to the board's seat representation.

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Client Acknowledgments:

California Integrated Waste Management Board

Bill Orr – Branch Manager, Recycling Technologies

Calvin Young – Staff, Recycling Technologies

California Department of Conservation

Zenny Yagen – Manager, Market Research Branch

Cyndy Young – Staff, Market Research Branch.

The 1960's Bit of Advice Proved Visionary

In the 1960's film, *The Graduate*, the aimless collegiate, Ben, contemplating his future, is soberly informed by a meddling family friend:

"Ben – I want to say one word to you – just one word – 'plastics'."*

* Calder Willingham penned these words in the 1967 screenplay.

Endnotes

- 1 The Society of Plastic Industries, U.S. Plastics Industry Data, SPI, www.plasticsdatasource.org, 2002.
- 2 American Plastics Council. The Resin Review 2000 Edition. APC, Washington D.C.: 2001.
- 3 "Plastics Industry Statistics: Year in Review". American Plastics Council: www.americanplasticscouncil.org/benefits/economic/00/pips_00_year_review.html, April 2002.
- 4 Environment and Plastics Institute of Canada (EPIC). News & Views. EPIC, Ontario: November 1996.
- 5 Miller, Chaz. Waste Statics: Profiles in Garbage. www.csun.edu/~vceed001/BFI/waste_stats.html, November 2001.
- 6 Life Cycle Analysis sources include: 1) Nordman, Bruce. "Product Life Cycle Analysis: The Missing Social Dimension", Lawrence Berkeley Laboratory. May 5, 1992. 2) Life Cycle Assessment, From Inventory to Action, November 4-5, 1993, MIT, "Life-Cycle Assessment in a Historical Perspective" K. Christiansen, Denmark. 3) Manseill, James R. A Qualitative Approach to Life-Cycle Inventory Analysis, Thesis for MS Degree, University of Tennessee, Knoxville, May 1993. 4) Cradle to Grave Packaging Management – conference by the Institute for International Research, Environmental Division, Proceedings, various speakers, February 26&27, 1991. 5) U.S. EPA, Life Cycle Design Guidance Manual, Environmental Requirements and the Product System, Office of Research and Development, January 1993. 6) Shireman, William K. Can and Bottle Bills, The CalPIRG/ELS Study Group Report, California Public Interest Research Group, Berkeley, California 1981. 7) "German government notification on second order amending the packaging order 2001/128/D: INCPEN Comments." Industry Council for Packaging & the Environment (INCPEN), www.incpen.org/html/german_draft_ord.htm. 8) Franklin Associates, Ltd. "Plastics: An Energy Efficient Choice." 1991.
- 7 "German government notification on second order amending the packaging order 2001/128/D: INCPEN Comments." Industry Council for Packaging & the Environment (INCPEN), www.incpen.org/html/german_draft_ord.htm.
- 8 U.S. Environmental Protection Agency. Municipal Solid Waste in the United States 1999. Prepared for the U.S. EPA by Franklin Associates, Ltd. Washington D.C., 2000.
- 9 CIWMB. Statewide Waste Characterization Study. Prepared for the CIWMB by Cascadia Consulting Group. Sacramento, December 1999.
- 10 U.S. EPA. Characterization of Municipal Solid Waste in the United States: 1997 Update. Prepared for EPA by Franklin Associates, Ltd. Washington D.C.: May 1998.
- 11 U.S. EPA. Characterization of Building-Related Construction and Demolition Debris in the United States. Prepared for EPA by Franklin Associates, Ltd. Washington D.C.: June 1998.
- 12 Headley Pratt Consulting. Understanding Plastic Film: Its Uses, Benefits and Waste Management Options. Prepared for the American Plastics Council, 1997.
- 13 Alameda County Waste Management Authority. Film Plastics Report. Alameda County, October 1998. www.stopwaste.org
- 14 Plastics White Paper Film Meeting. CIWMB, July 30, 2002.
- 15 American Plastics Council. 2000 National Post-Consumer Plastics Recycling Report. Prepared for APC by R.W. Beck. Washington D.C., 2001.
- 16 California Department of Conservation. Calendar Year 2001 Biannual Report of Beverage Container Sales, Returns, Redemption, and Recycling Rates. Sacramento, California: California Department of Conservation, May 23, 2002.
- 17 California Department of Conservation (DOC). Data Analysis Unit, data requests. Sacramento, CA: May 8, 2002 and April 24, 2002.
- 18 Fialka, John J. High Costs of Compliance Prompts Some Cities to Dump Parts of Plans. The Wall Street Journal, July 9, 2002.
- 19 Ruston, John F. and Richard A. Denison. Advantage Recycle: Assessing the Full Costs and Benefits of Curbside Recycling. Environmental Defense. Washington D.C., 1995.
- 20 Bellace, Nina. Scrap Plastic Markets, August 2002. fmp.caplasticsmarkets.com
- 21 California Futures. Cost Benefit Analysis of Six Market Development Options. Prepared for the CIWMB. Sacramento: July 1993.
- 22 California Department of Conservation. Official Notices, www.consrv.ca.gov
- 23 Plastics Recycling Update. December 2001: Vol. 14, No. 12.

- 24 CIWMB. "Two studies on the economic impacts of diversion: a brief review by Board staff." CIWMB, Sacramento, California: January 9, 2002; R.W. Beck and the National Recycling Coalition. California Recycling Economic Information Study. Prepared for the CIWMB. Sacramento, California: July 2001; and Goldman, George and Aya Ogishi. The Economic Impact of Waste Disposal and Diversion in California. Prepared for the CIWMB. Sacramento, California: April 4, 2001.
- 25 Plastics White Paper Framing Session, Recyclers and Processors. CIWMB, September 18, 2001.
- 26 Plastics News, February 25, 2002.
- 27 There are many sources on plastics in litter: U.S. EPA. Assessing and Monitoring Floatable Debris – Draft. EPA Office of Water, Oceans and Coastal Protection Division. Washington D.C.: August 2001; Washington State Department of Ecology. Washington State Litter Study, Volume One – Final Report. Washington State Department of Ecology, Solid Waste & Financial Assistance Program. May 2000; Florida Center for Solid and Hazardous Waste Management. The Florida Litter Study: 2001. Prepared by the Florida Center for Solid and Hazardous Waste Management for the Florida Legislature and Florida Department of Environmental Protection. Gainesville, Florida: June 2001; Center for Marine Conservation. International Coastal Cleanup. <http://www.cmc-ocean.org/cleanupbro/>; National Oceanic and Atmospheric Administration. "Marine Debris." <http://www.publicaffairs.noaa.gov/oceanreport/marinedebris.html>; Amaral, Kimberly. "Plastics in Our Oceans." University of Massachusetts. <http://www.umassd.edu/Public/People/Kamaral/Thesis/plasticarticle.html>. 1990; California Coastal Commission. "The problem with marine debris." California Coastal Commission. <http://www.coastal.ca.gov/publiced/marinedebris.html>.
- 28 "Waste more than just an aesthetic problem." Sea Grant News Media Center, <http://www.seagrantnews.org/news/debris.thml>.
- 29 Global Marine Litter Information Gateway. United Nations Environment Program Global Program of Action, <http://marine-litter.gpa.unep.org> and Reaney, Patricia. "Marine Organisms Ride Plastic, Threaten Ecosystems." Reuters News Service, April 25, 2002.
- 30 Global Marine Litter Information Gateway. United Nations Environment Program Global Program of Action, <http://marine-litter.gpa.unep.org>; National Oceanic and Atmospheric Administration. "Marine Debris." <http://www.publicaffairs.noaa.gov/oceanreport/marinedebris.html>; and California Coastal Commission. "The problem with marine debris." California Coastal Commission. <http://www.coastal.ca.gov/publiced/marinedebris.html>.
- 31 City of Los Angeles Department of Public Works. "Los Angeles Stormwater Trash Removal Project." CIWMB Grant Application. City of Los Angeles Stormwater Program, Los Angeles: November 28, 2001; Personal Communication, Mr. Desi Alvarez, City of Downey, June 19, 2002; and Moore, Shelly L. et al. Composition and distribution of beach debris in Orange County, California. Marine Pollution Bulletin, 1999.
- 32 CIWMB. "All-Container Recycling Rate" and "2000 Polyethylene Terephthalate (PET) Recycling Rate." Sacramento, CA: June 29, 2001.

About the Authors

Jim Gibson

– has a longtime specialty in environmental economics, integrated waste management, hazardous wastes, and recycling. He has prior experience with the State's RPPC law and helped convene California's Blue Ribbon Task Force on the Beverage Container Redemption Program. Jim Gibson holds a Ph.D. degree in Natural Resource Economics from Iowa State University, Ames.

Wendy Pratt

– specializes in environmental policy analysis and program evaluation. She has extensive experience with recycling, source reduction, composting, advance disposal fees, manufacturer responsibility, and environmental metrics. Ms. Pratt also helped convene California's Blue Ribbon Task Force on the Beverage Container Redemption Program. Wendy Pratt holds an M.S. degree in Ecology from the University of California, Davis.

Julie Holcomb

– designed this plastics white paper publication. Ms. Holcomb has earned a Gold Award from the State of California for her graphic design skills. Julie Holcomb holds a B.F.A. degree in Graphic Design from the University of the Pacific, Stockton.

Both Jim and Wendy have frequently been regarded as a rambunctious lot, questioning environmental laissez-faire doctrines, getting into the hair of lawyers and political scientists, intruding into the precincts of the physical scientists, and generally disturbing the peace of economic interests.

